

REMARKS/ARGUMENTS

Claims 1-4 are pending herein. Claims 1-4 have been amended as supported by Fig. 3 of the present application, for example.

Examiner Raevis is thanked for courtesies extended to Applicants' representative (Timothy Evans) during a telephonic interview on January 31, 2006. The substance of that interview has been incorporated into the following remarks.

1. Claims 1 and 2 were rejected under §102(b) over Yamaguchi. To the extent that this rejection may be applied against the amended claims, it is respectfully traversed.

Claim 1 recites a method of exciting a driving vibration in a vibrator. Claim 1 has been amended to clarify that the driving vibration is excited using a closed-loop circuit comprising a CR oscillator having an input and an output. An activating signal of rectangular wave from the output of the CR oscillator is applied to the vibrator to start the driving vibrator, and a signal from the vibrator is passed from the vibrator to the input of the CR oscillator.

Advantageously, the method according to claim 1 allows the vibrator to function as a frequency filter passing a signal substantially containing a vibration of a natural resonance frequency into the AC amplifier and the CR oscillator. This method, as described in paragraphs 16-19 of the present application, makes it possible to activate and stabilize the vibrator in a short amount of time.

Yamaguchi discloses an ultrasonic sensor utilizing a vibrating detector 2. According to column 5, lines 1-43 of Yamaguchi, the vibrating detector 2 is driven by a variable oscillator circuit 11 in a CPU 7 having an operating frequency setting means 9, which sets the frequency of the signal output to the vibrating detector 2. Particularly, Yamaguchi discloses, in Fig. 3 and column 6, lines 35-67, that the operating frequency setting means 9 portion of the CPU 7 varies and adjusts the frequency based on a number of factors considered by the CPU 7. For example, Yamaguchi discloses that the CPU determines the frequency to drive the vibrating

detector 2 based on an amount of abnormality, which is measured to determine the amount of LP in a tank (see column 6, lines 21-31). Therefore, Yamaguchi fails to disclose a method of exciting a driving vibration using a closed-loop circuit including the step of passing the signal from the vibrator to the input of the CR oscillator, as recited in claim 1.

Claim 2 recites a system for exciting a driving vibration in a vibrator. Claim 2 has been amended to clarify that the system includes, among other things, a CR oscillator having an input and an output for applying an activating signal of rectangular wave from the output of the CR oscillator to the vibrator to start the driving vibration and for receiving the signal from the vibrator into the input of the CR oscillator.

As discussed above in relation to claim 1, Yamaguchi excites a vibrating detector 2 using a variable oscillator 11 driven by an operating frequency setting means 9. Therefore, Yamaguchi fails to disclose a system for exciting a driving vibration including a closed-loop circuit comprising a CR oscillator having an input and an output for, among other things, receiving the signal from the vibrator into the input of the CR oscillator, as recited in claim 2.

For the reasons explained above, Applicants respectfully submit that claims 1 and 2 define patentable subject matter over the art of record. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

2. Claims 3 and 4 were rejected under §102(b) over Yamaguchi and under §103(a) over Yamaguchi in view of Katakura. To the extent that these rejections may be applied against the amended claims, they are respectfully traversed.

Claim 3 recites a method of exciting a driving vibration in a vibrator. Claim 3 has been amended to clarify that the driving vibration is excited using a closed-loop circuit comprising a ring oscillator having an input and an output. An activating signal of rectangular wave from the output of the ring oscillator is applied to the vibrator to start the driving vibration, and the signal from the vibrator is passed from the vibrator to the input of the ring oscillator.

As discussed above in greater detail, Yamaguchi excites a vibrating detector 2 using a variable oscillator 11 driven by an operating frequency setting means 9. Therefore, Yamaguchi fails to disclose a method of exciting a driving vibration using a closed-loop circuit including the step of passing the signal from the vibrator to the input of the ring oscillator, as recited in claim 3.

Claim 4 recites a system for exciting a driving vibration in a vibrator. Claim 4 has been amended to clarify that the system includes, among other things, a ring oscillator having an input and an output for applying an activating signal of rectangular wave from the output of the ring oscillator to the vibrator to start the driving vibration and for receiving the signal from the vibrator into the input of the ring oscillator.

As discussed above in greater detail, Yamaguchi excites a vibrating detector 2 using a variable oscillator 11 driven by an operating frequency setting means 9. Therefore, Yamaguchi fails to disclose a system for exciting a driving vibration in a vibrator including a closed-loop circuit comprising a ring oscillator having an input and an output for, among other things, receiving the signal from the vibrator into the input of the ring oscillator.

Katakura, used by the Examiner only for its disclosure that a ring oscillator is a type of CR oscillator, fails to overcome the deficiencies of Yamaguchi. Therefore, Applicants respectfully submit that claims 3 and 4 define patentable subject matter over the art of record. Accordingly, reconsideration and withdrawal of these rejections are respectfully requested.

For at least the foregoing reasons, Applicants respectfully submit that all pending claims herein define patentable subject matter over the art of record. Accordingly, Examiner Raevis is requested to issue a Notice of Allowance for this application in due course.

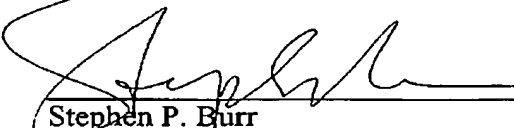
If Examiner Raevis believes that further contact with Applicants' attorney would be advantageous toward the disposition of this case, he is herein requested to call Applicants' attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-1446.

February 1, 2006

Date

Respectfully submitted,


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